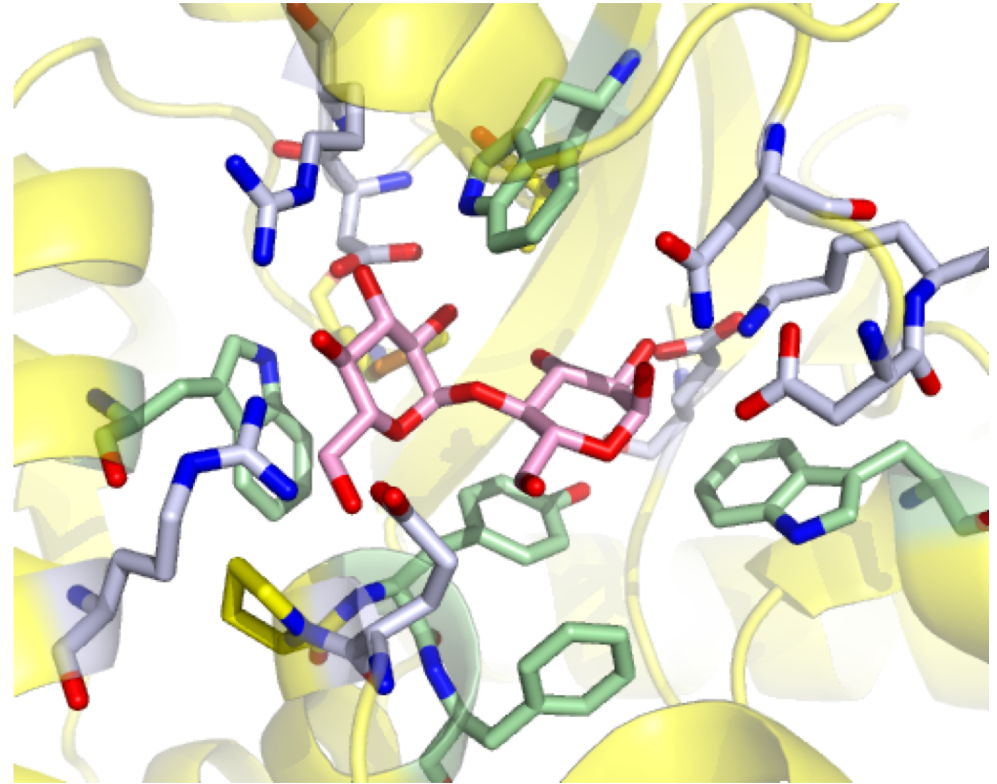
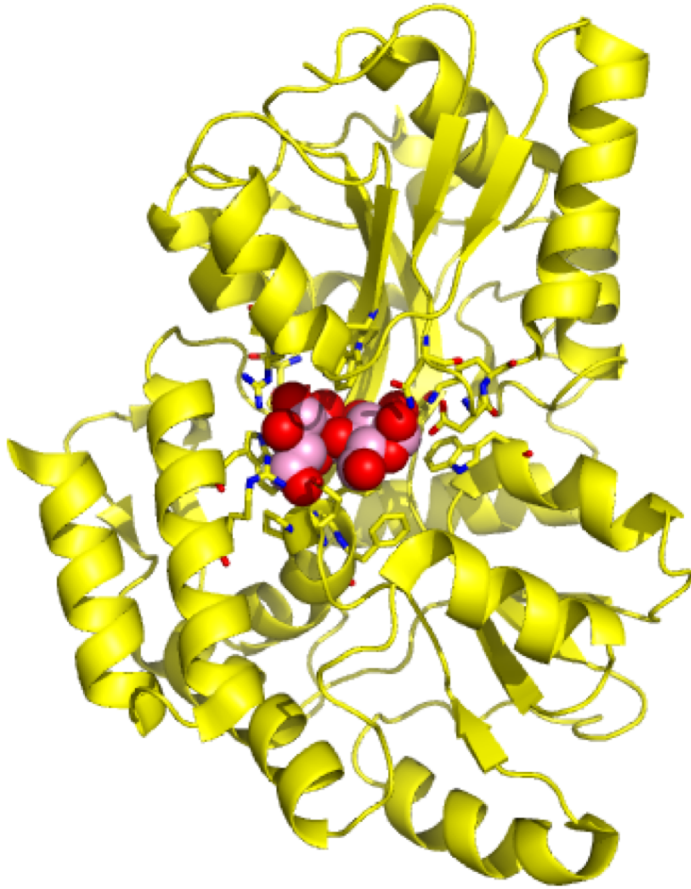


Maltose Binding Protein



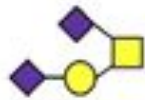
Pink = Maltose
Blue = H-bonders
Green = Aromatic residues

Some Glycans

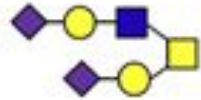
O-linked Glycan Structures

N-linked Glycan Structures

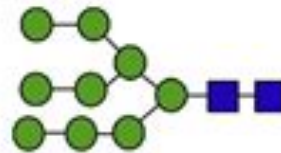
Core 1



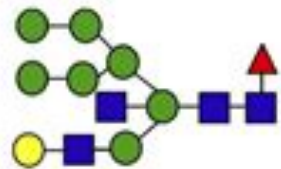
Core 2



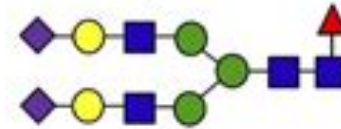
High-mannose Type



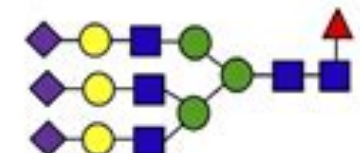
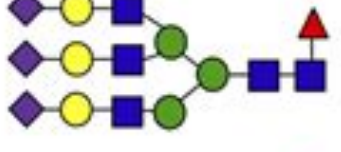
Hybrid Type



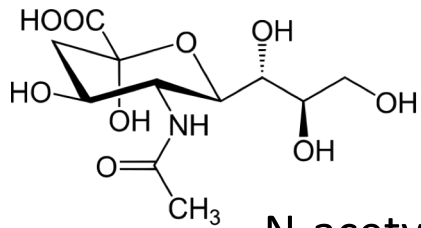
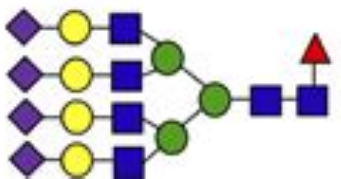
Complex Type
Biantennary



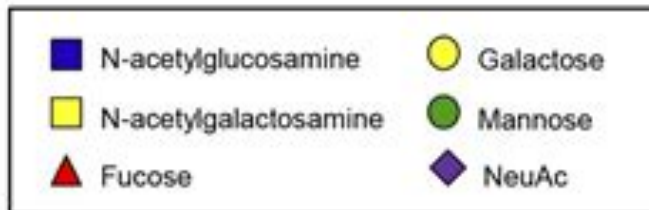
Triantennary



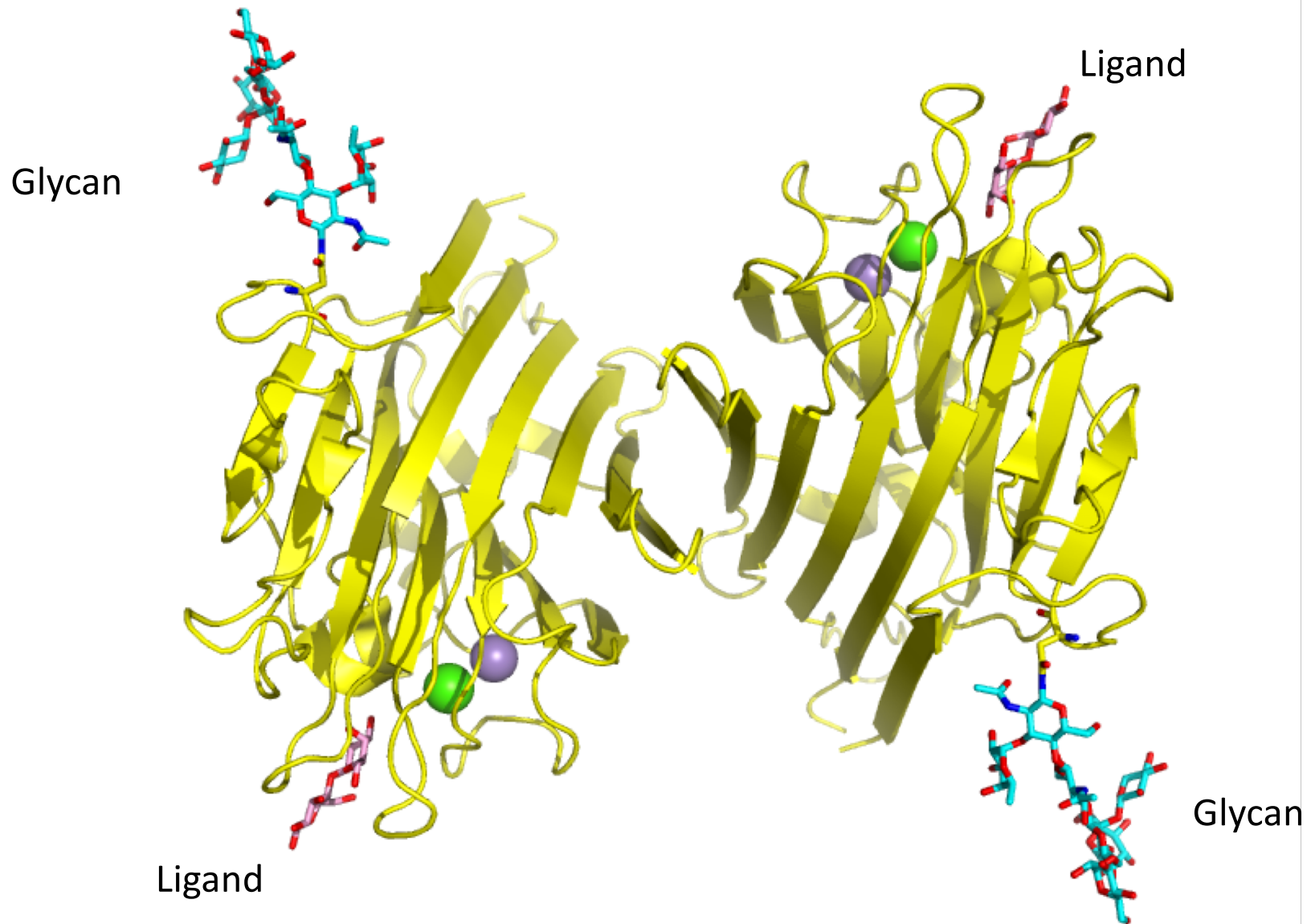
Tetrantennary



N-acetyl neuraminic acid

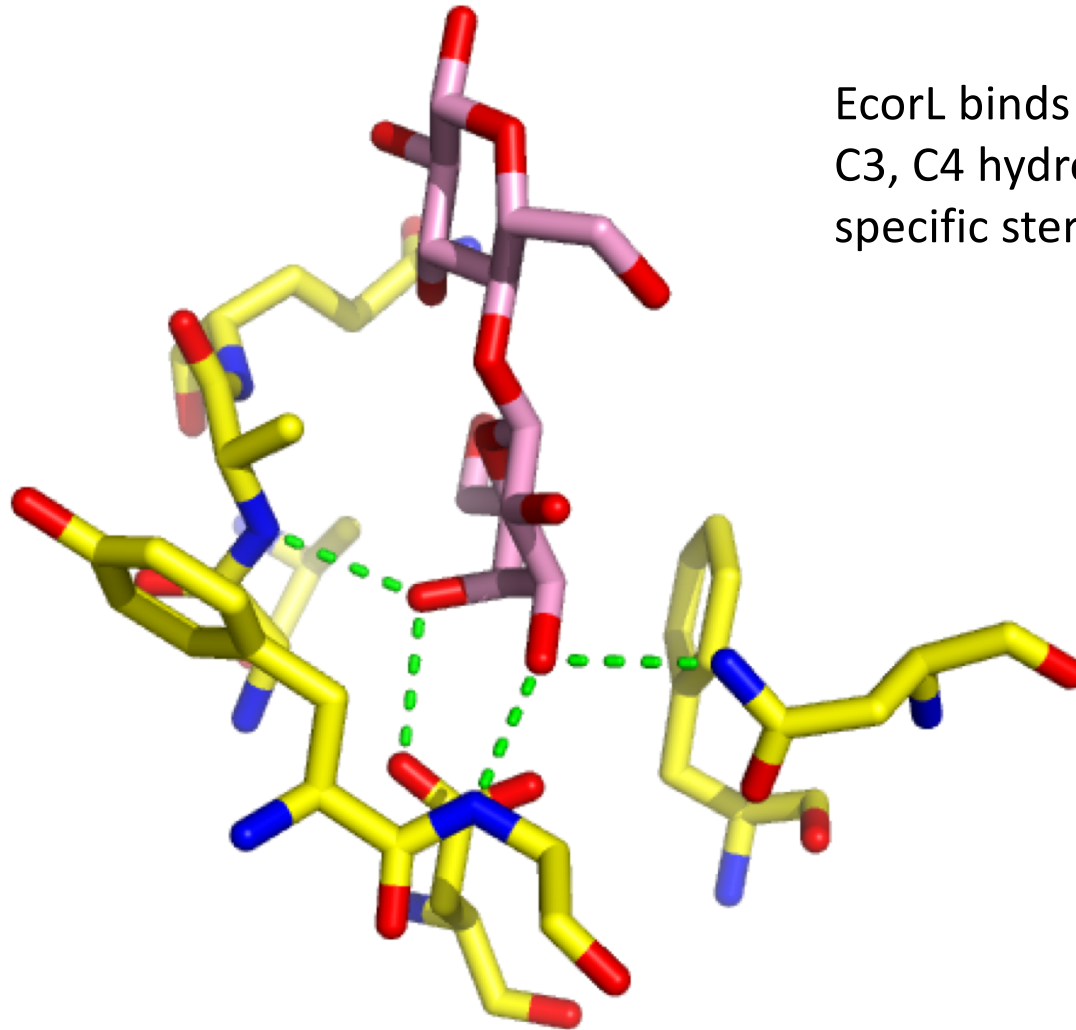


Lectin Glycan Interaction



PDB: 1LTE

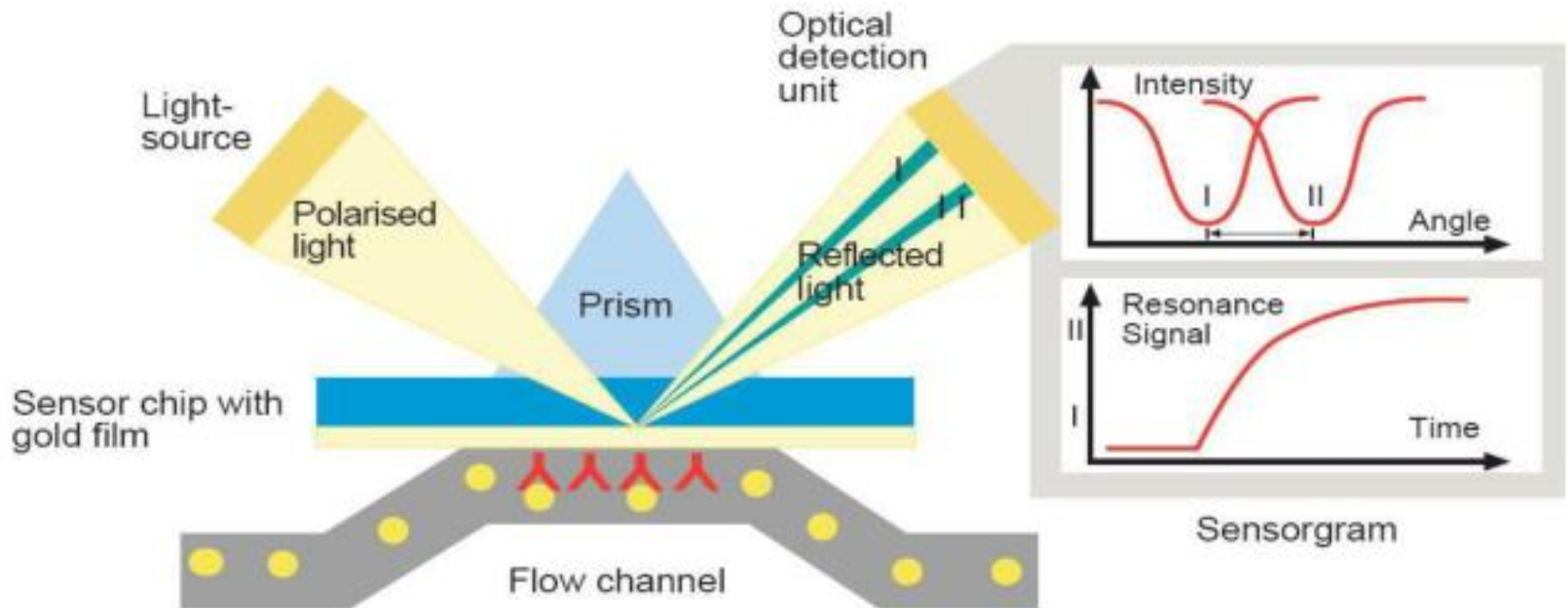
Ligand Binding by Lectin



EcorL binds galactose at C3, C4 hydroxyls with specific stereochemistry.

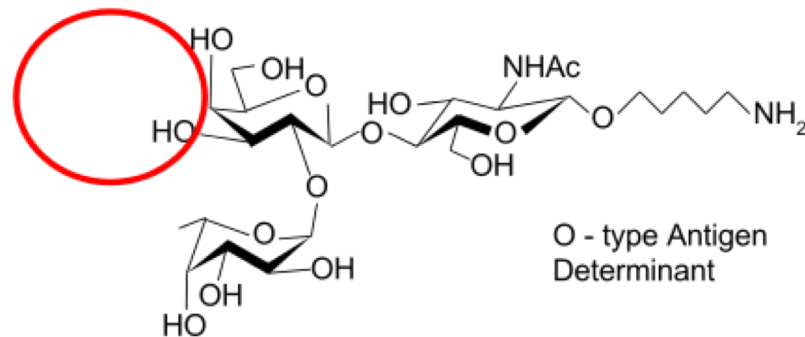
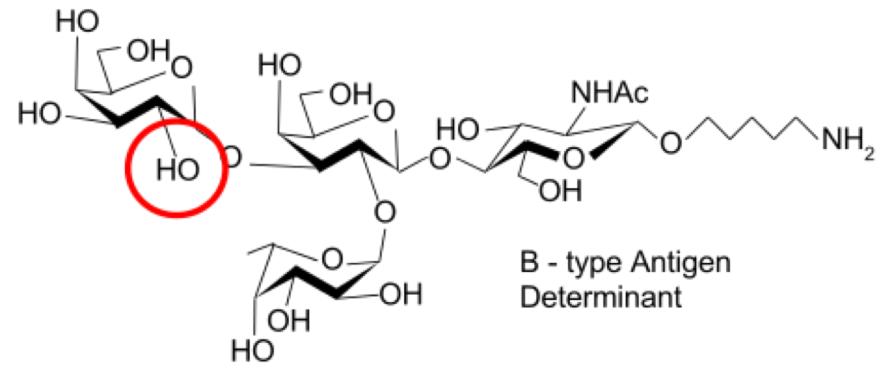
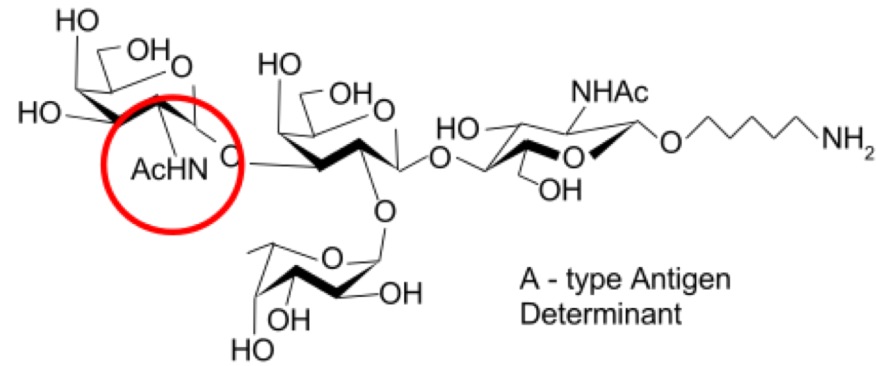
Surface Plasmon Resonance

<http://www3.imperial.ac.uk/pls/portallive/docs/1/42715699.PPT>



- Critical angle of polarised light → total internal reflection
- Results in excitation of surface plasmons in the gold
- Creates evanescent wave field → dissipates into sample matrix
- Intensity of reflected light depletes
- Critical angle changes with changes in sample matrix (binding)
- Change in angle is converted to resonance signal → directly proportional to mass bound at surface

ABO Epitopes



Vocabulary of Molecular Immunology

Antibody (Ab) - immune system receptor

Antigen - ligand for an antibody (usually a protein)

B cell - white blood cell that produces antibodies

CDR - complementarity defining region; loop that binds antigen

Epitope - part of antigen that binds antibody

Fab - Fragment of Ab containing full light chain/half heavy chain

Hapten - small molecule that acts as ligand for antibody

Idiotope - surface of Ab that interacts with antigen

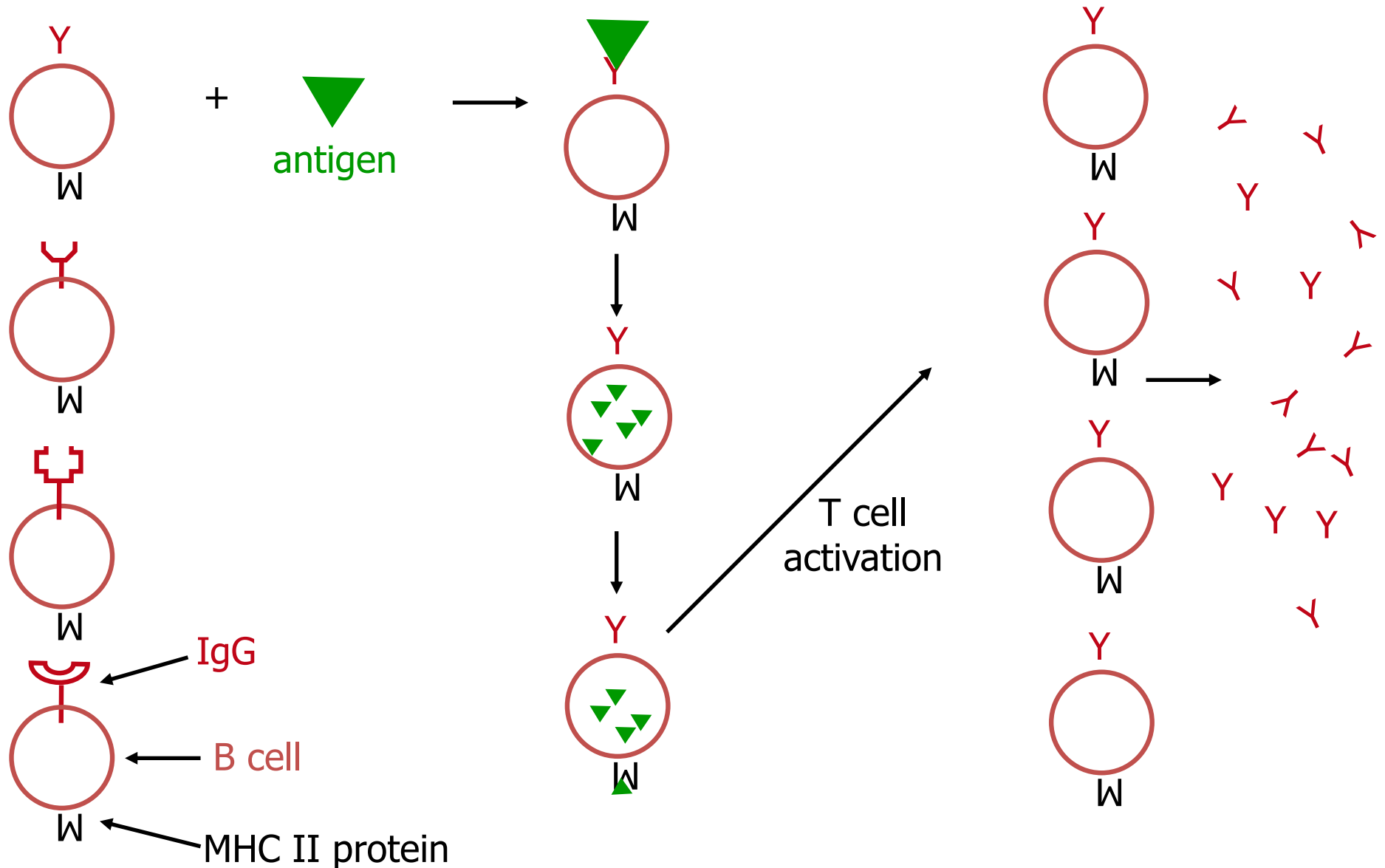
Immunoglobulin - class of proteins to which antibodies belong

Monoclonal Ab - Ab of defined sequence/structure

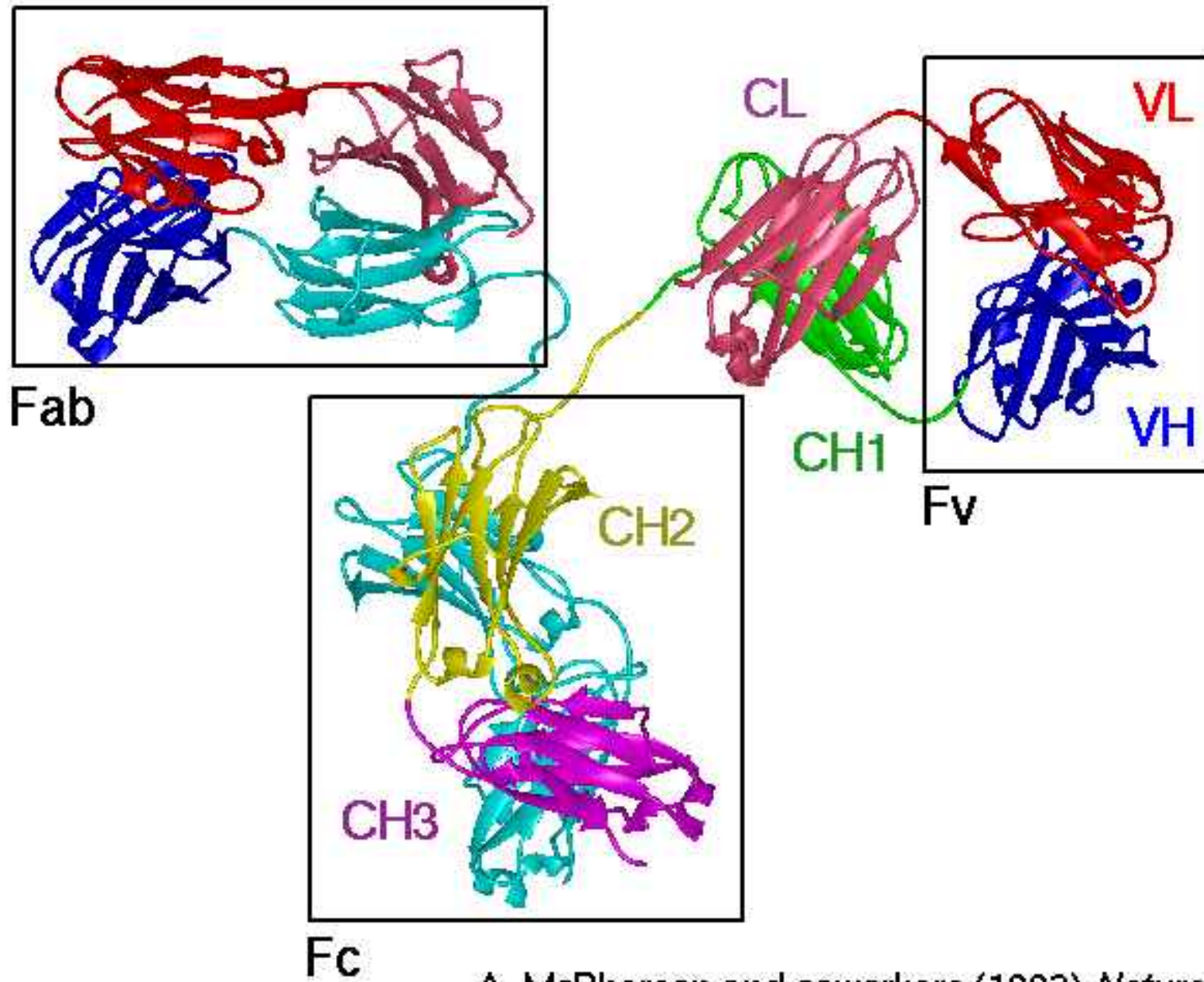
Variable region - N-terminal domains of light & heavy chains

2.5×10^8 B cells
 1×10^7 diff Abs

Antibody Production

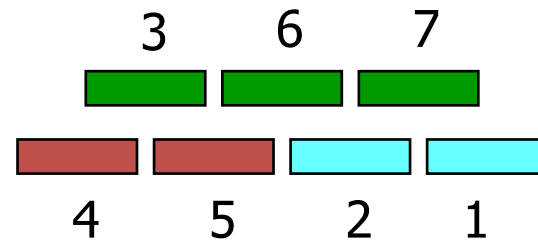
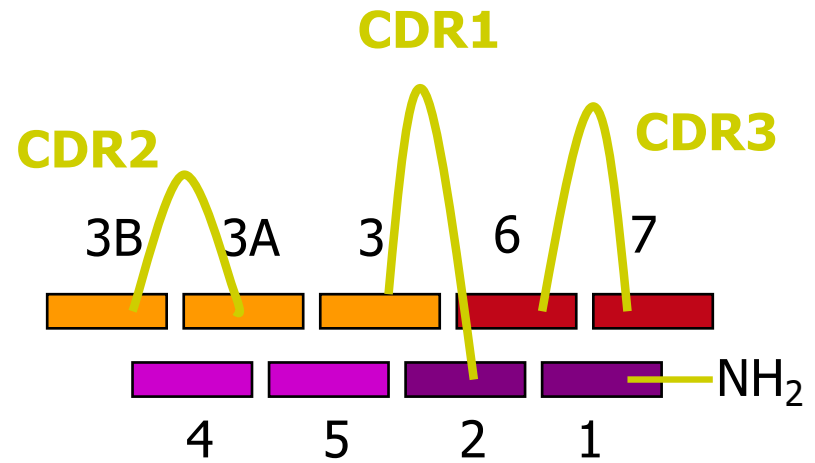
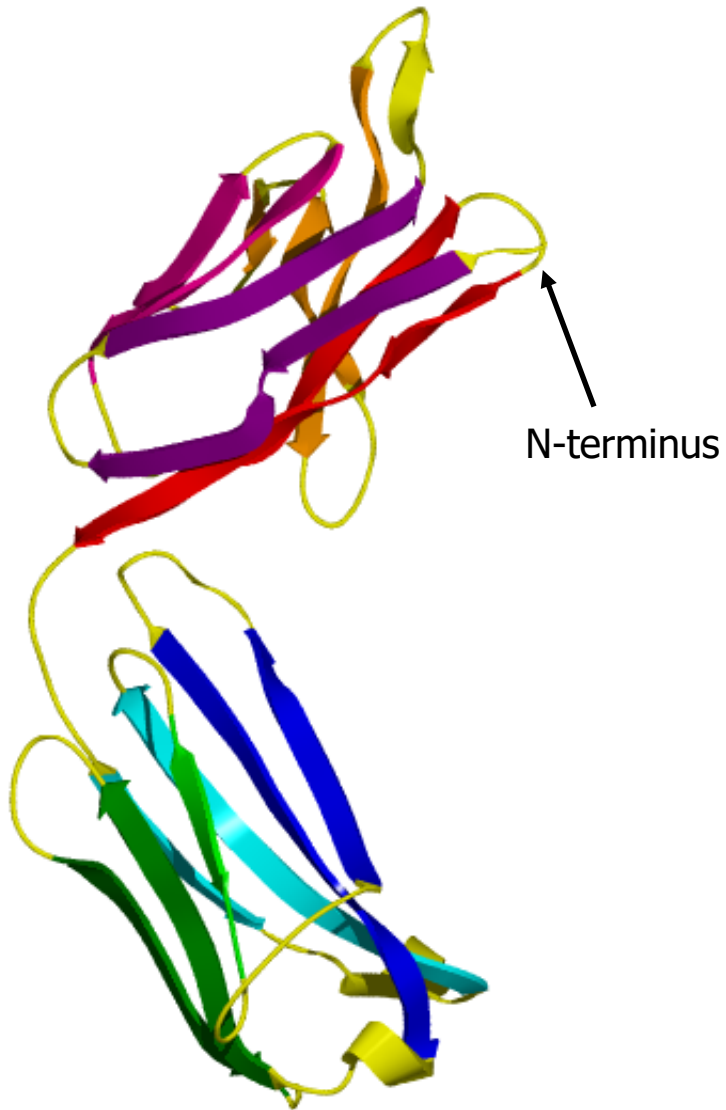


Structure of an Intact IgG

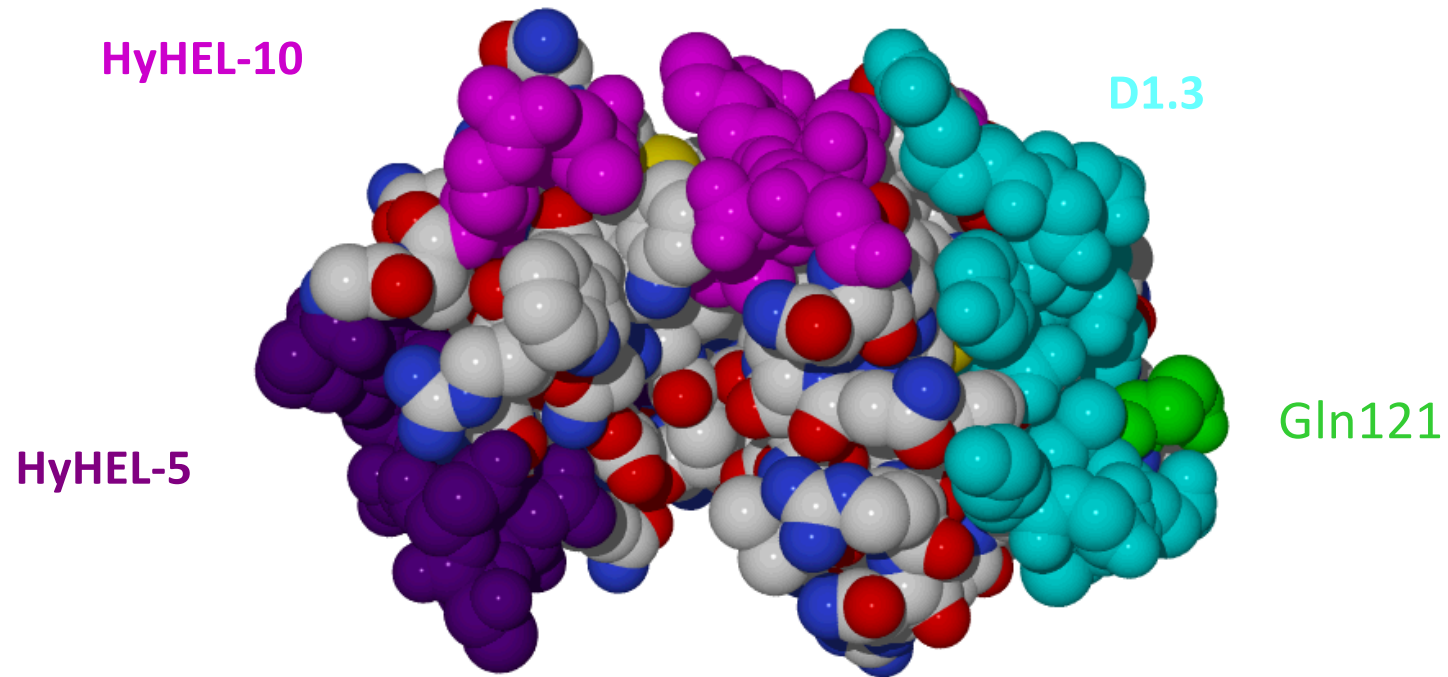


A. McPherson and coworkers (1992) *Nature* 360, 369

Ab Secondary Structure



Epitopes on Lysozyme



Antibody	Contact Area	vdW	H-Bond	Ion-Ion	K _d (M)
D1.3	685 Å ²	75	15	0	2 x 10 ⁻⁸
HyHEL-5	750 Å ²	74	10	3	5 x 10 ⁻¹¹
HyHEL-10	750 Å ²	111	14	1	2 x 10 ⁻¹¹

Ab Binding to HIV gp120 Glycan

